

Appl. No. 10/030,865
Amended December 11, 2003
Reply to Office Action of August 12, 2003

REMARKS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner has rejected claims 12-13, 15-16, and 21-22 under 35 U.S.C. § 102(b) as being anticipated by Bahorich et al hereinafter Bahorich.

The applicant respectfully traverses this rejection. In particular, the applicant believes that the process according to claim 21, is entirely different than that of Bahorich.

First Bahorich does not use a global reference section as used in claim 21 which is supported in the specification on page 9, line 8. In fact, Bahorich does not even use the term "global". Bahorich refers to the term "cell" that can be equated with the term "section" in the present invention. The process of Bahorich involves selecting a number of cells (sections), which contains portions of at least three seismic traces. Trace similarity (i.e. coherence or 3-D continuity) is measured within each cell only from the trace portions localized within this cell. The similarity measurement in a cell is performed without any reference to any data outside the considered cell. As shown in Fig. 2 of Bahorich, the reference trace portion A is localized within the cell, just as the adjacent trace portions B,

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C. The localized reference trace portion changes from cell to cell as the similarity is assessed across the data range. Because this localized reference trace portion makes this change, it is not an "global" reference section.

In contrast, with the present invention, the process involves "selecting a global reference". This global reference section is picked first and then remains unchanged during the entire similarity analysis. Thus the term "global" means that the term is "universal" meaning it is not dependent on a particular region selected in the measurement data set, but rather remains fixed prior to selecting the local sections and remains fixed and can apply across all of the local sections. If the process of Bahorich was applied to the data sets of the present invention, then there would be no "global reference section", but the "reference" would be a subsection of each local section which would be completely different than the process of the present invention.

In Bahorich, the similarity analysis is conducted on a cell by cell basis based upon the individual trace portions in each cell. This type of cell in Bahorich could be defined by the points A, B, and C in Fig. 2 of Bahorich. It could also be shown in the attached sheet A2, for a seismic dataset defined in the attached sheet A1. Thus in Bahorich, the similarity analysis is individualized for each cell with a different local reference trace portion for each cell. Attached sheet A3, shows the two ways for obtaining a global

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reference section of the present invention in claim 21, either using on unchanging set of points internal to the measured data set, or one changing set of points external to the measured data set.

In the present invention, as claimed in claim 21, this global reference section can be formed synthetically, that is outside of the measured data set including each of the local sections, and wherein this global reference section is then used to create a similarity analysis of a number of individual points in each local section which is shown in the attached sheet B1. Attached sheets B1, B2, B3, and B4 each show a process using a synthetic or external global reference section, which could be used on cell or local sections a, b, c, and d.

The global reference section could also be an internal global reference section which is as stated on page 11, last paragraph, is selected at a well with ascertained lithographical information. This feature is also shown in attachments C1, and C2. In these attachments, the internal or ascertained absolute reference section is taken from within the measured data set but remains the same throughout the entire similarity analysis. Support for a process using either the internal (ascertained) and external (synthetic) types of absolute reference sections can be found in the specification on the last paragraph of page 11 and in the first paragraph of page 12.

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In summary, the similarity measurement in the process of Bahorich is characterized as follows:

1. One cell (section) is considered for each similarity determination, which is a local cell (section).
2. The similarity is measured within this considered local cell (section) only.
3. There is no absolute reference that would appear unchanged in all similarity measurements.

The similarity measurement in the present invention according to claims 21 and 24 is completely different:

1. Two cells (sections) are considered for each similarity determination, which are a local cell (section), and the absolute reference cell (section).
2. The similarity is measured between the two cells (sections).
3. A global reference (reference section) appears unchanged in all similarity measurements.

Just like the process of the present invention, the ultimate

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result of the present invention is very much different than in Bahorich. For example, for Bahorich the results could be obtained for the seismic dataset defined in the attached sheet A2, using the similarity measurements for Bahorich, which would render one set of values shown in attachment D1. However, using the process shown in attached sheet A3 and in the attached sheet B1 for the present invention, the results would be much different as shown in attached sheet D2. The method of Bahorich obtains a high similarity in homogeneous regions and a low similarity in inhomogeneous regions since only the local internal similarity is measured using an ever-changing local and not a global reference. This is shown in attachment D1.

The process of the present invention as in claim 21, is much different, and therefore arrives at a much different result. For example, with the present invention, the similarity does not depend on homogeneity of the considered region but on the correspondence to the characteristics of the non-local and unchanging global reference section. This result is shown by way of example in attachments D2 and D3.

Thus, the applicants believe that claim 21, and dependent claims 12, 13, 15-20, 22 and 23 are patentable over the above reference.

In addition, and in particular, in contrast to claim 12 of this

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invention, Bahorich only discloses using one single local reference trace portion for each cell, that is the reference trace portion "A" shown in FIG. 2 of Bahorich. However, in the present invention, as in claim 12, each section, whether the global reference section, or a local section, comprises multiple trace portions, which is shown in attachments B and C. Therefore, the applicant believes that this process is entirely different than that shown in Bahorich.

The Examiner has rejected claims 17-20 under 35 U.S.C. 103(a) as being anticipated by Bahorich in view of Neft. The applicants believe that based upon the above explanation of the claims, claims 17-20, which depend from claim 21 are also patentable over the references cited taken either singly or in combination.

In addition, new claim 24 has been added. The applicants believe that new claim 24 is based upon claim 21, and also includes additional defining features. Therefore, the applicant believes that new claim 24 should also be allowable. In claim 24, the new feature, "center point", is disclosed in the original filed description on page 15, 2nd paragraph:

"The calculated similarity values are then assigned as attributes to the center point of the local data section viewed at the time, and each local data point that is of interest is taken into account, if necessary across the entire 3-D data set."

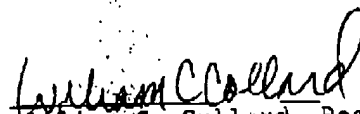
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Thus, the applicant believes that claim 24 is patentable over the above cited references taken either singly or in combination.

In conclusion, claims 12, 13, and 15-23 remain in the application. Claim 20 has been amended to clarify its meaning. New claim 24 has been added but no new matter has been added. Accordingly, the applicants respectfully request early allowance of the remaining claims.

Respectfully submitted,

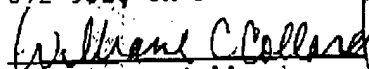
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I hereby certify that this correspondence is being faxed to the Examiner, Toan M. Lee at (703) 872 9319 on December 11, 2003.


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